Expectations and the Lucas Critique: Key

Recall the model from class:

$$\tilde{Y}_t = -c(i_t - E_{t-1}[i_t]) \tag{1}$$

$$i_t = n + m\tilde{Y}_t \tag{2}$$

1. Inserting these expectations into the model from class:

$$\tilde{Y}_t = -c(\Delta\tilde{Y}_t) \tag{3}$$

So suppose that the Fed wishes to keep $\tilde{Y}_t > 0$. Equation (1) then requires that $\Delta\tilde{Y}_t < 0$. The Fed may thus keep output above potential, but only if the output gap is decreasing each period.

2. Inserting this expectation into the model yields:

$$\tilde{Y}_t = \frac{-cn}{1+cm} \tag{4}$$

Because $m > 0$, it is tempting to conclude that a negative value of n is sufficient to yield a positive output gap.

The complication is that $i_t > 0$. To see if this condition prevents the Fed from keeping output above potential, insert this back into the interest rate rule.

$$i_t = n - \frac{-cnm}{1+cm} \tag{5}$$

The question is thus whether it is possible that both $\frac{-cn}{1+cm} > 0$ and $n - \frac{-cnm}{1+cm} > 0$. Both conditions must hold for booth the interest rate and output gap to be positive.

Suppose that $\frac{-cn}{1+cm} > 0$. This requires that $n < 0$. The interest rate then consists of a negative number minus a positive number. This sum is thus negative. Therefore no such policy exists.

3. Maybe. They are the most commonly assumed type of expectations. Rational expectations, however, arguably make agents too smart because to form them, agents must know the true model that describes the economy. Adaptive learning, which seeks to make agents about as smart as the people modeling them are therefore potentially more appealing.

4.

$$E_t[i_{t+1}] = \bar{\pi} + m\pi_t \tag{6}$$

5. Under rational expectations, agents are optimizing by forming optimal (smallest average forecast error) expectations. Their behavior is thus reminiscent of firms that rationally maximize profits or households that rationally maximize utility.

6. There are many possible answers.